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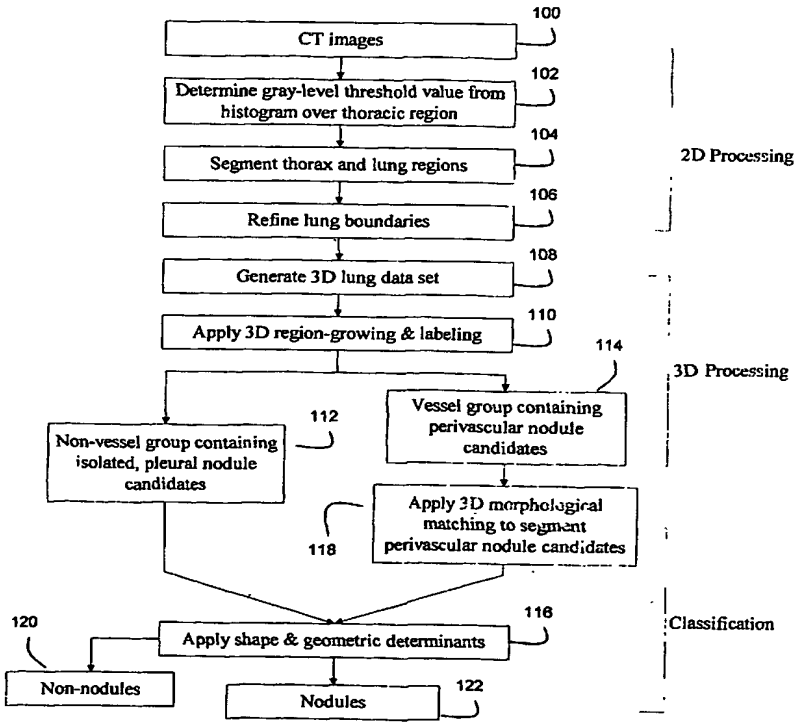
(54) Title: METHOD AND APPARATUS FOR AUTOMATED DETECTION OF TARGET STRUCTURES FROM MEDICAL IMAGES USING A 3D MORPHOLOGICAL MATCHING ALGORITHM



Flow diagram illustrating overall method for the automated lung nodule detection from CT images.

(57) Abstract: A method for the automated detection of target structures shown in digital medical images, the method of comprising: (1) generating a three dimensional (3D) volumetric data set (108) of a patient region within which the target structure resides from a plurality of segmented medical image slices; (2) grouping contiguous structures that are depicted in the 3D volumetric data set to create corresponding grouped structure data sets (112, 114); (3) assigning each grouped structure data set to one of a plurality of detection algorithms (116), each detection algorithm being configured to detect a different type of target structure; and (4) processing each grouped structure data set according to its assigned detection algorithm to thereby detect whether any target structures are present in the medical images (120, 122). Preferably, the target structures are pulmonary nodules, and a specialized detection algorithm is applied to image data classified as a candidate for depicting perivascular nodules. To segment perivascular nodule candidates from surrounding vessels, the image data is preferably correlated with a plurality of 3D morphological filters.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06K 9/00
US CL : 382/131
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,987,094 A (CLARKE et al) 16 November 1999 (10.30.1997), column 3, lines 50-68 and column 6, lines 35-55	1-68
Y	US 6,609,021 B1 (FAN et al) 19 August 2003 (20.05.2002), column 2, lines 1-50)	1-68
A	US 6,240,201 B1 (XU et al) 29 May 2001 (24.07.1998), column 2, lines 40-68.	1-68
A	US 6,678,399 B2 (DOI et al) 13 January 2004 (23.11.2001) column 3, lines 45-65	1-68
A	US 6,466,687 B1 (UPPALURI et al) 15 October 2002 (02.11.1998), column 2, lines 45-68	1-68

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Continuation of B. FIELDS SEARCHED Item 1:
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